CHAPTER 9
Intellectual Capital in the Global Food Sector

Commercial success in the global market by a nation's firms rests not so much on the country's endowment of natural resources as on the intellectual capabilities of its people. In contrast to generally accepted economic orthodoxy, an examination of the literature on competitive advantage reveals one principle that consistently stands out: the firms that are most successful in gaining global market share, regardless of nationality, industry, or product, are those that have made substantial investment in intellectual capital. In essence, they put significant effort and resources into the process of human learning—into seeking, discovering, and capitalizing on new things.

Intellectual Property

Important sources of global competitive advantage are business strategies, product and process innovation, and supportive public policies, which are all products of the human intellect. In the language of the new international economics, these competitive advantages are called firm-specific assets, or a firm's intellectual property.

In the context of commercial behavior, a firm's intellectual property refers to those special skills and holdings that enable it to differentiate itself from its rivals. It includes things like brand names, product reputation, trademarks, copyrights, patents, consumer loyalty, advertising, technological leadership, data gathering and analytical capability, special relationships with suppliers, and marketing and management expertise. Generally intangible, a firm's intellectual property is often not fully captured in financial accounts. Even so, strong ties between these intangible assets and international commercial success have been well chronicled in numerous theoretical and empirical studies. Covering a wide array of industries, these studies reveal compelling evidence

of the importance of intellectual property to international competitive success.

Dunning's (1977) OLI construct is perhaps the most eclectic theory of international commerce. OLI stands for *ownership*, *location*, and *internalization* advantages that a firm may be able to exploit in international markets.

Ownership advantages refer to unique, firm-specific assets owned by a firm, which the firm is motivated to both protect and use to generate income. Examples include registered trademarks, copyrighted brand names, secret or patented product formulations, market intelligence, and under-utilized merchandising capacity. As evidence of such assets, one would expect firms to hold leading positions in their home markets as a means of demonstrating control over a highly preferred brand or product image or an effective distribution and merchandising capability. Further, one would expect firms with such ownership advantages to be making substantial investments in market research, development, advertising, and promotion.

Locational advantages relate to benefits firms can realize by operating facilities in foreign markets. Advantages include reduced costs associated with avoiding import barriers such as tariffs and quotas, lower transportation costs, and the development of expertise in local competitive practices such as targeted advertising, pricing-to-market, and close coordination with local distributors and retailers.

Internalization refers to advantages that a firm realizes from performing a range of marketing functions itself rather than depending upon independent suppliers or distributors. For example, a food manufacturer might be able to sell to a foreign distributor at a relatively small transaction cost. But, the manufacturer's reputation for product quality could be undermined by imprudent handling or merchandising by the foreign distributor. Thus, the manufacturer has an incentive to operate its own foreign distribution system. That is, it internalizes the transaction in order to protect its product quality and reputation.

OLI advantages are the result of intelligent decision-making rather than an endowment of natural resources. That is, they are the products of a firm's, or a nation's, intellectual capital. For example, the design of innovative products results from research and development; gaining and holding consumer acceptance results from clever advertising and promotion activities; effective local distribution results from marketing and merchandising expertise; product quality results from testing and control regimes**.**

Empirical Evidence

Many empirical studies, a number of which are specific to processed foods, have documented the strongly positive impact of intellectual capital—particularly as embodied in research and development, managerial intensity and expertise, and product differentiation and innovation—on commercial success in global markets.

Using exports as a measure of global market reach, Handy and MacDonald (1989) found positive impacts of expenditures on research and development on exports across 32 U.S. manufacturing industries. Pagoulatos and Sorensen (1975), utilizing cross-sectional data for 88 U.S. manufacturing industries, found exports positively related to product differentiation as well as to R&D. Using similar data for another time period, Marvel (1980) confirmed the positive R&D-export relationship; further, his study found exports positively related to managerial intensity. Lyons (1989), using pooled time series and cross-sectional data for 111 UK industries, also documented a positive effect of R&D on exports.

Baldwin (1979), using observations across 27 manufacturing industries, also found exports positively associated with managerial intensity. Lipsey (1991), with pooled cross sectional-time series data for 28 U.S. industries, confirmed positive effects of both managerial intensity and R&D on exports. Koo and Martin (1984), observing a sample of 288 U.S. industries, found a positive impact of product innovation on exports. Henderson and Frank (1990), using cross-sectional data on 42 U.S. food-manufacturing

industries, verified a positive effect of R&D on processed food exports.

With sales from affiliated foreign operations (FDI sales) as the indicator of global market success, Yu (1990) reported finding positive impacts of R&D and home-market advertising. Handy and MacDonald, in the above-referenced study, also found positive impacts of R&D and home advertising on FDI sales. Ray (1991), in a study of 32 manufacturing industries in five countries, cites strong evidence that FDI sales are positively influenced by specialized human capital and managerial intensity, and weak evidence of a positive impact of home market share, i.e., firms with dominant home-market positions are more successful in generating sales by foreign affiliates. Baldwin (1979) found product differentiation, managerial intensity, and home-market seller concentration positively associated with FDI sales.

Grubaugh (1987) reported findings from a study of 300 U.S.-based multinational firms that tie FDI directly to relative levels of firm expenditures on both R&D and advertising. Dunning (1981) cites evidence of a positive relationship between the value of a firm's intangible assets and FDI. Specific to processed foods, using U.S. food-manufacturing industry data, Connor (1983) documented positive impacts of advertising, R&D, and home market share on FDI sales. Using pooled cross-section time-series data for 628 food manufacturers with headquarters in 16 countries, Henderson, Vörös, and Hirschberg (1996) found intangible assets, product differentiation, and share of home market all positively associated with FDI sales.

Combining both exports and sales from foreign affiliates, in a study of 24 U.S. industries, Gruber, Mehta and Vernon (1967) found both to be driven jointly by R&D. Overend and Connor (1994) examined factors jointly influencing export and FDI patterns for a cross-sectional sample of 33 U.S. food manufacturing firms that also do business in the UK. Their findings show a positive relationship between a firm's investment in foreign marketing expertise and its combined volume of export shipments and shipments from foreign operations.

While R&D, advertising, managerial intensity, and product innovation are all indicators of investment in intellectual property, perhaps the clearest form of commercial transaction in intellectual property is international licensing of product brand names. An international product license is a contract by a firm who owns a brand name that is well established in one country (the *licensor*), with a firm in another country (the *licensee*) to manufacture and sell the branded product in the licensee's home country and/or third countries. Here, it is mainly *image* that a firm in one country is selling and a firm in another country is buying.

In addition to exclusive use of the brand name, the licensor may provide the licensee technical production assistance, a quality control regime, and a product formula or recipe; supply some critical ingredient(s) such as a flavoring extract; and render some financial help for advertising and other market development activities. In turn, the licensee has production, marketing, and distribution rights for the licensed product in the specified market(s), and remits to the licensor part of the sales revenues in the form of a fixed fee and/or an *ad valorem* royalty. Internationally licensed foods and beverages include such well-known brands as Kraft, Sunkist, Budweiser, Almond Joy, Spam, Lipton, Toblerone, and Löwenbräu.

In a study of food manufacturing firms involved in global product licensing, Henderson, Sheldon and Thomas (1994) found a strong correlation between a firm's dominance in its home market and its global market reach. Nearly all firms, whether licensor or licensee, have leading positions in their home market for the classes of product licensed; 41 percent held the largest share of their home market, and 73 percent held either the number 1 or number 2 position. Most food industry executives reported that they would not license with a foreign firm unless that firm was already successful in establishing a leading position in its own market.

Further, the evidence shows that firms involved in international product licensing have made substantial investments in developing and promoting their products and brands. One measure is the book value of their licensed brand names. These values are quite large on

average, the value of a licensed brand name exceeded 12 percent of total assets. A study reported by Ourusoff (1992) places the average value of 12 leading internationally licensed food brands at just over $7 billion each.

Human Capital, Creativity, and Competitive Advantage

Clearly, firm-specific advantages arise from the creativity of individuals. This creativity, a key characteristic of intellectual capital, has given rise to new forms of global commerce in processed foods: direct operation of foreign affiliates, joint ventures, strategic alliances, and product and brand licensing. This commerce has expanded by several magnitudes in the past decade.

Not only are firms creating global markets for their products, they are developing global sourcing networks for product formulation and design, ingredients, engineering and plant construction, food-processing equipment, and packaging systems. Specialized ingredient firms such as Pfizer, Genecor, Rhone Poulenc, Quest International, and Haarman and Reimer are forging long-term alliances with food processors to formulate new products and production and distribution techniques. Likewise, firms such as Calgene, Celltech, DeKalb Genetics, Genentech, and Monsanto are forging new relationships with agricultural producers to grow new varieties of crops and animals, often the products of biogenetic engineering, that provide basic feedstock for these innovative products and processes.

The competitive position of countries is also influenced by the creativity of individuals. Porter (1990), identifying factors that explain the competitive advantage of a nation's industries in global commerce, cites the importance of five classes of national assets: human resources, knowledge resources, infrastructure resources, capital resources, and physical resources. Only one, physical resources, "the abundance of the nation's land, water, mineral, or timber deposits, hydroelectric power sources, fishing grounds, and other physical traits" (p. 74), refers to a natural endowment. The others are all products of the human intellect, that is, intellectual

activity and the institutions such intellect creates. Human resources include the quality and skill of a nation's labor force, characteristics that are typically measured in terms of level of education. Knowledge resources refer to a nation's stock of scientific, technical, product, and market knowledge; stocks that reside in universities, public and private research centers, corporate headquarters, government statistical agencies, business and scientific literature, trade associations, and professional societies. Infrastructure resources include such institutional creations as a nation's systems of transportation and communications, mail and parcel delivery, funds transfer, health care, and cultural institutions. Capital resources represent the amount and cost of capital available to finance industrial growth, the stock of which is a product of the savings rate and the structure of the nation's capital markets.

An example illustrates how quickly contemporary technology can be transferred to a firm and country with little or no production history. In this case, a producer of wine and soft drinks in Malta decided to enter the brewing business. The firm had extensive marketing and distribution know-how, but no experience as a brewer. The solution was to develop an alliance with Löwenbräu International. This resulted in a new state-of-the-art brewery incorporating the latest brewing and packaging technology gathered from around the world. The plant received *Food Engineering*'s International Plant-of the-Year award in 1991. Now, this plant not only supplies Malta, but also provides import competition to southern Europe. To emphasize the point, a country with little experience quickly became a world-class producer by sourcing technology and ingredients internationally.

Be it at the firm or national level, the distinguishing characteristic of these antecedents for commercial success in the global marketplace is the application of the human intellect. The success of nations, industries, firms, and individuals increasingly is built on the ability to create intellectual property and protect the rights to its use. This is now gaining recognition in the international commercial community. Evidence can be found in the Uruguay Round Agreement of the GATT. Therein, national policies that protect industries through import tariffs and production subsidies

are being stripped away. But more importantly, substantial new international protections for intellectual property have been created, particularly in the areas of patents, trademarks, copyrights, brand names, and trade secrets**.**

Policy Implications

Government plays an important role in international commerce. But, when viewed in the context of human capital and intellectual property, it is different than commonly thought. It has little to do with protecting industries from foreign competition, or subsidizing industries to encourage them to expand at the expense of foreign competition. Rather, it has much to do with creating incentives for individuals and private enterprises to invest in learning, in building intellectual capital through education and investment in research and development, and in using public resources to provide the foundation upon which both individuals and industry can build.

The creation and protection of intellectual property rights is a significant task of public policy. The opportunity for pecuniary gain—the possibility of turning knowledge and intellectual effort into income and wealth—is a powerful motivator of both individuals and private enterprises. There are two basic approaches: lower the cost of discovery and innovation, and raise the returns from doing so successfully. Some combination of subsidies and tax concessions for applied education and research will foster the former. The latter requires that those investing in the process will have some protection from imitators in making commercial application of new discoveries. Copyrights, trademarks, patents, and legal protections for trade secrets are among the relevant policy instruments. The multilateral protections newly accorded these devices through the World Trade Organization should be a substantial boost to international commerce in processed foods, particularly for the United States, which is a world leader in creating and promoting new products and brands.

Moreover, public policy is needed to promote education and basic research, which provide the foundation for applied discovery and development that lead directly to commercial applications. It is

difficult, perhaps not possible, for individuals and private enterprise to capture in their income or profit accounts the full benefits of creating and discovering basic knowledge. Therefore, they will be unwilling to bear the full cost. This is the role for public support of education and basic research.

There remain many unknowns. What, for example, is the optimum length of time to grant a protection for intellectual property? It should be long enough to hold out promise of profitable return to research and development, yet short enough not to stymie adaptation and adoption of desirable products and efficient processes. What is the distinction between an innovative product or process that warrants protection as intellectual property, and a knock-off whose primary attribute is imitation?

In addition to the question of how to protect innovations, there is the question of how to target public support for applied research and development. Often there is an urge to "pick winners," that is, to select industries or sectors that are believed to have high growth potential if the right discoveries are forthcoming. This is typically what industrial policy is about: putting public resources into research and education with specific applications in mind. In many regards, U.S. farm policy has had this intent through agricultural experiment stations, extension and land-grant education, and production subsidies.

Fundamentally, this raises the question, where is the line drawn between basic and applied research? Public support for basic education and research is critical to overcoming a market failure that results in too few resources being so used. Erring away from this side starves the nation of the basic knowledge and discoveries needed to prompt true innovation that is the foundation for promoting industrial growth through competitive advantage in global markets. Applied research and development leads directly to the creation of intellectual property and is inherently a matter for private investment. Erring toward this side provides protections that may ultimately be self-defeating, protections that discourage innovation by coddling vested interests.